GEOGRAPHIC SCHOOL BULLETINS

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Photograph by Richard H. Stewart

JUMBO SCULPTURES OF ANCIENT MEXICO SEE DAYLIGHT AGAIN

Seven giant heads, each weighing 15 tons or more, have been uncovered by successive expeditions sent to Mexico jointly by the National Geographic Society and the Smithsonian Institution, under the direction of Matthew W. Stirling. Of the seven, this is the only one with a faintly pleasant expression. This smiling head and two others were found a few yards apart, all facing east, at La Venta, about 40 miles south of Veracruz (Bulletin No. 2).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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General Headquarters, Washington, D. C.

St. Pierre and Miquelon: Fog-Bound Relics of French Empire

TINY St. Pierre and Miquelon have drawn big nations and whole empires into the discussion of which French authorities should have sovereignty over 90 square miles of rocky, fog-bound land.

This small island cluster, if situated off the coast of France, would be a negligible factor in the sum total of France's geography, a mere handful of wintry, treeless, unproductive rocks. But they are situated instead off the coast of Canada, the largest member of belligerent Britain's Dominion family, and they lie near the mouth of the Gulf of St. Lawrence, near secret Great Circle routes by which convoys carry precious war materials across the North Atlantic (map, next page).

Near U. S. Bases in Newfoundland

Their location is only 15 miles south of Newfoundland, where the United States has just established bases for the defense of North Atlantic shipping and of the air and water avenues of approach to the northeastern U. S.

In a quiet cove on St. Pierre's coast an Atlantic cable dips under the ocean on its submarine route to France, with its important freight of words.

The big harbor of St. Pierre is a superb roadstead within easy reach of the rich cod-fishing grounds of the Grand Banks off Newfoundland. The French fishing fleet, as in the days before Frenchmen settled any part of the North American continent, uses St. Pierre in normal times as a supply base for the summer's fishing.

Recognizing that loss of the islands would virtually end French fisheries in the northwestern Atlantic, France always held tight to barren St. Pierre and Miquelon while territorial changes were going on, even after selling Louisiana. They constitute the oldest piece of France's once vast North American empire, and the last bit that remains. They were already in use by French fishermen when Cartier reached them from Canada in 1536, and were part of the realm governed by Frontenac, Champlain, and La Salle. When France lost all of Canada to the British in 1763, she retained the islands as a consolation prize. By 1814 she had lost them to Britain and recovered them again five times in as many tugs-of-war.

A "One-Town" Colony of Few Resources

"St. Pierre and Miquelon" is the usual designation for the whole French colonial family of isles and islets, comprising ten named members and a scattering of rocks and reefs. Some of them are inhabited only periodically, when the fishing is in season. Miquelon, the largest, was once the two largest. South of Big Miquelon lies Little Miquelon or Langlade, so close that within the past two centuries sand piling on a reef between them has built an isthmus of beach connecting the islands, dumbbell style. Mariners without up-to-date charts have tried to sail between them and have been wrecked on the low sandy isthmus.

Of the 4,200 inhabitants of the colony, 89 per cent, or 3,400, live in the port of St. Pierre (illustration, inside cover) on the east side of the island of that name. A fishing town, it was hard hit by the post-war decline in the markets for cod. Then came the United States' prohibition era, and for about 15 years St. Pierre's merchants imported beverages from France and sold them to American "rum-runners," who sailed their boats right into the port. Harbor improvements, city water system, concrete warehouses, and two macadamized roads were built from the profits of this brief period of prosperity.

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Photograph by Gustav Anderson

FISHERMEN MADE ST. PIERRE FRENCH MORE THAN FOUR CENTURIES AGO

The explorer Cartier in 1536 discovered that French fishermen had preceded him to the island of St. Pierre and had given it its present French name. The barren land offers little food, even to patient cattle nibbling the thin grass. To supplement their fish diet, women pick wild berries, and men go hunting (left) for rabbits and birds. The frame houses of St. Pierre, the only town, are banked around with seaweed for warmth. Women follow the French provincial practice of paddling the laundry clean in the streams. Beyond St. Pierre are visible other rocky islands of the French group of the North Atlantic (Bulletin No. 1).

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Scientific Exploration in 1941 Pushed in the Americas

"MADE in America" is a safe label to apply to most of last year's scientific exploration. While war blacked out to a certain extent the investigations of science elsewhere, the United States and Latin American nations were able to continue exploration almost as usual for 11 months of the year.

A discovery throwing light on ancient American Indian civilizations was turned up in southeast Mexico during the year by the joint expedition of the National Geographic Society and the Smithsonian Institution, directed by Matthew W. Stirling. Some 40 miles south of Veracruz, 782 jade pieces were excavated. The collection included small carved figurines, beads, masks, and circular objects shaped like tiny hats with topless crowns, which were used as ear plugs.

Third "Lucky Strike" in Mexico

The jade cache, the largest of its kind ever found in the Western Hemisphere, was the third "lucky strike" of the expedition. Two previous seasons in Mexico had netted the scientists the oldest dated monument found in the Americas (a date in the Mayan calendar corresponding to 291 B.C.) and seven colossal stone heads (illustration, cover).

In the Central American republics of El Salvador and Honduras, as well as in neighboring British Honduras, scientists of the Carnegie Institution uncovered extensive Mayan ruins of huge pyramids, courts, temples, and homes.

Human footprints, recorded in volcanic rock, were discovered near Managua, in Nicaragua. They are believed to have been made by persons fleeing from a volcanic eruption of perhaps five thousand years ago.

Peru a Lively Field for Investigation

Peru was a lively field for archeological research. Two Inca cities were found hidden under jungle growth near Cuzco, high up in the Peruvian Sierras (illustration, next page). The recent finds are in the vicinity of famed Machu Picchu, the Inca site discovered and explored by expeditions sent out between 1911 and 1915 under the joint sponsorship of the National Geographic Society and Yale University. Widespread ruins already revealed in the new excavations include "fantastically designed" battlements, massive watchtowers, and signal stations, and suggest defense bases for the Inca empire builders' far-reaching conquests.

A long-term "Good Neighbor" project of exploration was begun in 1941, launching ten archeological expeditions to study the civilization of Western Hemisphere Indians before the coming of Columbus. Under the combined sponsorship of the Institute of Andean Research, the American Museum of Natural History, and the Office of the Coordinator of Inter-American Affairs, both United States and Latin American scientists already have taken the field. Work at the site of the ancient ruined city of Pachacamac, Peru, has recovered preserved food, bones, textiles, pottery, and many household articles of the Inca and pre-Inca Indians.

Within the United States, excavations in 17 States were rewarded by finds which ranged from buried temples to fossilized hoofprints and bone fragments of dinosaurs, rhinoceroses, three-toed horses, giant squirrels, and midget camels, estimated to have lived forty million years ago. The skeleton of a 30-foot sea reptile, with double-jointed jaws, was reported from a South Dakota field. The animal is believed to have lived about a hundred million years ago, when salt water covered

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After prohibition repeal, inasmuch as the fisheries had declined, subsidies from France were necessary. Since the fall of France in June, 1940, the islands have been almost completely dependent on Canada and the United States.

St. Pierre and Miquelon are not very hospitable in appearance. The only trees are dwarfed spruce and juniper, generally only waist-high. Although the hills are green, the soil is so thin that pasturage for cattle is scant. On southern St. Pierre and on Miquelon are some small farms and gardens, but their produce is limited. Fishing for cod in the local waters and on the Newfoundland Grand Banks, and trading with visitors from ships that call at St. Pierre, are the only occupations.

Though slightly farther south in latitude than Paris, the islands have the typical summer fogs and winter winds of northern weather. Winter temperatures rarely drop below zero, but the August high is only about 60 degrees. Snow lingers on the hills until June. Because of the strong winds, berets are popular headgear. Twice in the past century St. Pierre's harbor has frozen over, and spring always brings icebergs.

Gendarmes and customs officers in St. Pierre wear the same uniforms as in France. Dogs are everywhere. Children train them to pull the carts used to haul wood fagots down from the hills. Coal and oil are costly in the islands.

Note: For further information, see "Islands Adrift: St. Pierre and Miquelon," in the *National Geographic Magazine* for December, 1941.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "France-in-America Scattered over Wide Area," November 18, 1940, and "European Colonies Make Non-American Spots in the Americas," October 23, 1939.

The islands of St. Pierre and Miquelon are shown on the Society's Map of Canada. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

Bulletin No. 1, January 19, 1942.

FRANCE'S COLONY APPEARS GNAT-SIZED

The vast expanses of Newfoundland to the north and Canada to the west dwarf St. Pierre and Miquelon to the comparative size of a gnat. The sandy isthmus has grown up in less than 150 years to connect Grande Miquelon, largest of the islands, with Petite Miquelon, now locally called Langlade. Bourg de Miquelon is a mere hamlet, Anse du Gouvernement (Government Cove) a summer settlement, and St. Pierre the only real town. Ile Verte and Ile aux Marins are among the smaller members of the archipelago, some being too small to show.

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Cirenaica Geography Sways Battle in Africa

AMERICAN-MADE equipment has been meeting battle tests in the British drive from Egyptian bases into the Italian colony of Libia. The grim testing ground has been Cirenaica, the eastern of the two bulges into which the Gulf of Sidra divides the Libian coastline.

Italians for the past 30 years have been colonizing Libia in two sections, Cirenaica in the east, and Tripolitania in the west, adjoining the French colony of Tunisia. The British 1941-42 winter campaign against the Italian colonies has restored to the headlines the names of Cirenaica's ports, made familiar a year ago by a similar drive—Porto Bardia, Tobruch, Derna, and Bengasi.

Road Hemmed in Between Mountains and Sea

Most of the action in the struggle for Libia has taken place along the Mediterranean shores of Cirenaica. The region's physical formation is a significant factor in any battle for the area. Its narrow coastal plain is hemmed in between the sea on the north and semi-desert highlands to the south, either high mountains or inhospitable plateau land. The country inland is the barren plateau of Marmarica, also called Barca. The main communication route from east to west follows the coast, along which a thousand-mile motor road was opened to traffic from French Tunisia to Egypt about two years before the outbreak of war.

In places the coastal plain narrows to a half-mile or less, and sometimes is pinched out altogether where steep slopes of the inland plateau extend to the blue waters of the Mediterranean. In such spots the motor road turns inland to climb the hills overlooking the sea. Where the road runs close to the sea, much of it is open to naval attack, and reports from time to time have described the bombardment of Italian troops by British warships.

Water Decides Value of Desert Outposts

Spaced more or less regularly from east to west along the Cirenaica coast are the ports of Porto Bardia, Tobruch, Derna, and Bengasi. Bardia, surrounded early in the current British offensive, is a town of fewer than three thousand inhabitants, situated within ten miles of the Egyptian frontier. With its excellent harbor, it was a haven for German submarines during the early years of the World War.

Modern improvements including an airport, storage facilities and repair shops made it useful to the Italians as a base on their initial drive into Egypt in 1940.

About 160 miles west of Bardia, Tobruch (Tobruk) has been a British "island" in eastern Libia since the second Axis advance toward Egypt in the spring of 1941 pushed the rest of the Imperial troops back into the Egyptian desert. With a normal population of about 4,200 people, it has one of the best natural harbors on the Libian shore. The port and city had been considerably modernized and improved during Italian rule, which began with the Italo-Turkish war of 1911-12. Tobruch was given an airfield, a hospital, radio station, and refrigeration plant, always appreciated in the "desert colony" of Libia. The city, however, lacks adequate water, and imports it from Derna, about 100 miles west.

Derna is especially interesting to Americans as the African city over which the United States flag once flew, during the war between the United States and Tripoli over the activities of the Barbary pirates. With an international army of Arabs, Greeks, and Americans, former American Consul-General William Eaton

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what now is the Middle West. The creature was a relative of the lizards.

In Utah, a piece of building wood, dated by tree rings, indicated that Indian construction in that area was carried on in 217 A.D.—the earliest estimated date for building activity in that part of the world. North of the Arctic Circle, near Point Hope, Alaska, fresh material was gained by excavation of a prehistoric "lost town" along the migration route between Asia and America used by Indians and Eskimos.

Early 1941 saw the discovery of a million-year-old skull on the island of Java, and a rich collection of burial antiquities in French Indo-China. New Soviet investigations were started within the tomb of the famed conqueror Tamerlane, at Samarkand, in the Uzbek S.S.R. of Asiatic Russia.

For further information on scientific exploration in Latin America, see "Expedition Unearths Buried Masterpieces of Carved Jade," and "Jungle Housekeeping for a Geographic Expedition," *National Geographic Magazine*, September, 1941; "Great Stone Faces of the Mexican Jungle," and "On the Cortés Trail," September, 1940; and "The Incas: Empire Builders of the Andes," February, 1938.

See also these GEOGRAPHIC SCHOOL BULLETINS: "Expedition Discovers Large Cache of Mexican Jade Objects," May 14, 1941; "Expedition Finds Five Huge Carved Heads in Mexico," April 15, 1941.

Bulletin No. 2, January 19, 1942.

Photograph by Jacob Gayer

ANCIENT ARCHITECTS ENDEARED THE INCAS TO MODERN ARCHEOLOGISTS

Builders who raised Inca temples, palaces, and roads, left a lasting record of their vanished civilization for scientists to explore today. Whole dead cities can be studied from enduring remnants of solidly built masonry. Cuzco, in addition to being a base for archeological investigation in the vicinity, is itself an ancient Inca town with a modern city built on top. The wall (above) was built by Inca masons, of carefully fitted stones, with the serpent symbol of Inca rulers above the portal. Spanish conquerors, who later doubled the height of the wall, were unwilling, or unable, to equal the Incas' skill in stone construction.

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War Needs Stressed in Engineering Projects of 1941

THE engineering genius of a world at war in 1941 was focussed on filling the transport, power, and plant needs of nations whose deadliest weapon is industrial production.

The United States was foremost in engineering accomplishments. With giant airplane, shipbuilding, and other defense plants in the Pacific Northwest hungrily awaiting its electric power, the Grand Coulee Dam "turned on the juice" in March, 1941 (illustration, next page).

Defense Industries Call for More Power

The power appetite of the United States' humming defense industries during 1941 hastened the work on many other great hydroelectric projects. The Cherokee Dam of the Tennessee Valley Authority, on the Holston River, was finished in December, the eighth to be completed.

Rated by engineers as the second largest earth-fill dam in the world (surpassed only by Montana's Fort Peck Dam), Nebraska's Kingsley Dam on the North Platte River was dedicated in July, 1941. In Oklahoma the $23,000,000 Pensacola Dam of the Grand River project was completed. Like the Kingsley Dam, this 6,565-foot-long concrete wall will serve both for power and for irrigation.

The year was marked by the expansion of aircraft-building capacity, with vast plants erected at Fort Worth, Texas; Buffalo, New York; Tulsa, Oklahoma; and at Willow Run, Michigan; and additions to works at Wichita, Kansas; Seattle, Washington; and at San Diego, Santa Monica, Long Beach, and Burbank in California. Several of these are "blackout plants," having no windows or skylights, and supplied with "manufactured weather."

Two important new United States gasoline and oil pipe lines went into operation in 1941. Dedicated on December 19 was the 456-mile southeastern gasoline pipe line between Fort St. Joe, Florida, and Chattanooga, Tennessee, by way of Atlanta, Georgia. Laid and welded in 142 days, a crude oil pipe line between Portland, Maine, and Montreal, Canada, went into operation in November.

Water from the Colorado River reached eight California cities for the first time in June, 1941, as the great Colorado River Aqueduct began to deliver water to Los Angeles and vicinity through a 300-mile system of conduits, tunnels, canals, and pumping stations.

New Niagara Bridge, New Rails for Iran and Russia

In the Canal Zone, 1941 brought feverish work on the construction of a third set of locks and a new approach waterway for the Panama Canal.

Heralded as the world's finest airport, the new Washington National Airport for the Nation's Capital opened for business in June, 1941. Built largely on land pumped from the Potomac River bed by huge dredges, this modern airfield incorporates many novel features. Nearby Baltimore also opened its new airport in 1941.

A U. S.-Canadian engineering accomplishment of 1941 was the new international Rainbow Bridge over the Niagara River just below Niagara Falls, which was opened for traffic on November 1, replacing the span destroyed by ice in 1938.

In the world beyond the United States and its possessions, engineering works of 1941 emphasized roads and railroads. Because of its military possibilities, special interest was attached to progress on the French Trans-Saharan Railway. The Vichy Government is extending the line, which is planned to connect Oran on the Mediterranean coast of Algeria and the Niger River region of French West Africa. The new line will meet an existing railroad to Dakar on the Atlantic. France has announced that the railroad has been completed in standard gauge as far as Colomb Bechar, about 400 miles south of Oran; there are indications of construction beyond that point. The total length of this line will be about 1,500 miles.

To improve communications across Iran (Persia) with Russia, work was being hurried throughout 1941 on two Iranian rail lines. One is the railroad between Tehran, the capital, and Tabriz in northwest Iran, a vital link between Persian Gulf ports and Russia. Tehran is a junction of the Trans-Iranian Railway running from Bandar Shahpur on the Persian Gulf to Bandar Shah on the Caspian Sea; Tabriz already has a spur line joining the Russian rail system. Early in 1941 the new link was already complete beyond Zenjan, the approximate mid-point on the Tehran-Tabriz route.

Construction on the Iranian railway to join Tehran with Meshed in northeastern Iran and finally with India was pushed along in 1941. Long-neglected sections of the Indian railway in Baluchistan, especially between Nok Kundi and Zahedan (Duzdab), were improved, which

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pushed toward Derna across 600 miles of desert from Alexandria, in Egypt. Derna was captured in April, 1805, with the aid of a few ships of the United States Navy, and remained in American hands until peace was made in June of that year. Modern Derna, with its valuable springs, is known as "the pearl of Libia."

The leading city of modern Cirenaica is its capital, Bengasi, normally Italy's chief naval and air base for eastern Libia. An ancient town, it had a population of about 65,000 at the outbreak of the war. Since taking it over from the Turks, the Italians have made large expenditures for improving the city and its harbor facilities. Through Bengasi came many of the Italian troops and supplies used in the first campaign against Egypt in the present war. To this port, also, came a peaceful army of colonization in 1938, when Italy launched a large-scale settlement project in North Africa.

Note: For further information on Cirenaica, see "Old-New Battle Grounds of Egypt and Libia," *National Geographic Magazine*, December, 1940, and "Cirenaica, Eastern Wing of Italian Libia," July, 1930.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "Another Flag Change for Derna," April 28, 1941; "Italy's Crumbling African Empire Equals 43% of U. S. Area," February 10, 1941; "Senussi Sect of the Sahara a Factor in History Again," February 3, 1941; and "Marmarica, Italo-British Battlefield, Where Sahara Meets Sea," January 6, 1941.

Bulletin No. 3, January 19, 1942.

Photograph by Vittorio Dimani

A REBECCA WITH A NOSE-RING GOES TO A DESERT WELL

The scarcity of water is a geographic factor which modern civilization has not been able to modify greatly. Though irrigation has brought gardens along the coast, the life of wandering Bedouin tribes on the desert uplands of southern Cirenaica has changed little. This well has a cupola above it to keep the sand out and the water cool, and to retard evaporation. The Bedouin girl shows by her uncovered face that she lives in the desert "back woods," and not near the coastal towns, where a veil would be worn.

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Jungles and Mountains of Embattled Malaya

TROPICAL jungles and 7,000-foot mountains have entered the war in the Malay States. They are geographic obstacles in the path of the Japanese campaign for Singapore.

Advancing against that tropical British stronghold from the north, the Japanese have had to reckon with the terrain of the whole group of Malay States, a jungle area of 51,220 square miles, as large as the State of Alabama, at the tip of the Malay Peninsula. From the northeastern border of the Malay States, where the Japanese began their drive, the distance to Singapore at the peninsula's southern extremity is about 350 miles.

States, Federated and Unfederated, under Native Sultans

At its widest point the Malay States "bulb" terminating the peninsula is only about 200 miles from east to west. Singapore, which with Penang and some surrounding territory comprises the British colony of the Straits Settlements, dominates the southernmost tip. More than half of the "bulb" consists of the four Federated Malay States, the tin-producing federation of Perak, Pahang, Negri Sembilan, and Selangor, with their administrative capital at Kuala Lumpur.

The rest of the land is split among the five Unfederated States. The largest of these is Johore, just north of the island on which Singapore stands; it was the Sultan of Johore who sold that island in 1819 to Sir Stamford Raffles to become a British port and fortress of the highest military importance.

Some regions of the Malay States have never been penetrated except by tigers, elephants, and other wild animals, and venturesome savage hunters on their trails. Although acre after acre of tangled brush has been cleared for the development of rubber plantations, hot steamy forests still cover nearly three-quarters of the inland country. In contrast, the coastal sections are thickly populated farming areas.

Tin Mines in North, Rubber Plantations in West

The rivers are too shallow to be of military use. None is large enough to get its name on the average map. Highways to the interior are few.

Two railroads traverse the Malay States from north to south, but none along the east coast. Running from Singapore to Bangkok in Thailand, one cuts down the center of the Malay States, on the west side of the crest of the mountain backbone. A branch line loops westward to the coastal plain, through the tin and rubber centers of Kuala Lumpur, Ipoh, and Prai (near the island of Penang).

The western half of the Malay States is the rubber country, where plantations produce about 45 per cent of the world's rubber supply. This extensive rubber industry has developed within the past sixty years, since the first rubber plants were brought to Singapore from Brazil.

Equally important to the outside world are the tin mines of the north, which yield on the average from 30 to 37 per cent of the world's tin output. The ore is dredged from tremendous open pits along the mountain slopes (illustration, next page).

Note: The Malay States may be located on the Map of the Indian Ocean which was issued as a supplement to the March, 1941, number of the *National Geographic Magazine*.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "Geo-Graphic Brevities: Singapore: The British Lion's 'Left Paw,'" November 3, 1941; and "Jungle Malaya: A Patch of the Orient Geared to U. S. Industry," March 10, 1941.

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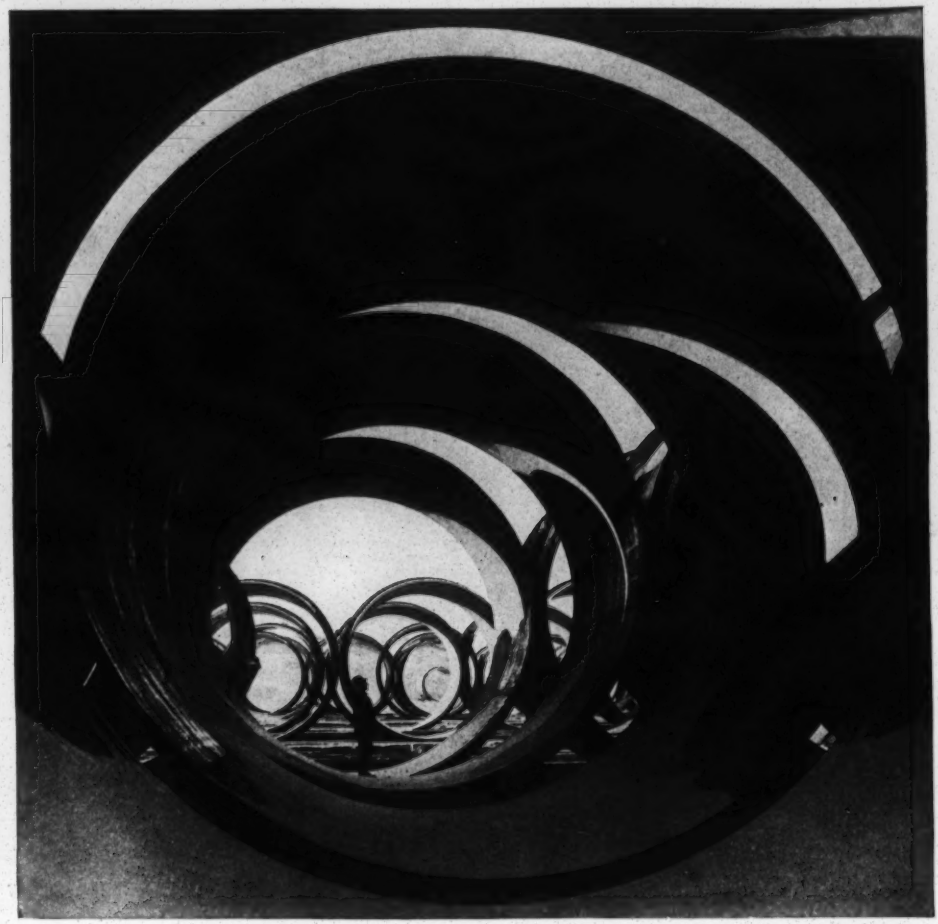
made it a part of the Allied supply route to Russia from the Indian port of Karachi.

Soviet Russia went ahead with railway expansion in 1941, with construction of a new line (211 miles long) between Kazan and Bugulma in eastern European Russia. New Soviet railways opened to traffic included the Akmolinsk-Kartaly line (500 miles), Volochaevka-Komsomolsk (236 miles), Kandalaksha-Kuolajärvi, and Petrozavodsk-Suojärvi, the last two being in the Karelian region bordering Finland.

Early in 1941, Russian workers completed a 500-mile automobile highway over 12,000-foot passes in the Pamir Mountains. The road, named Stalin's Highway, links Stalinabad, capital of the Tadzhik Republic, with Khorog on the Afghanistan frontier.

South Africa has a new artificial "inland sea" covering 60 square miles as a result of the completion of the Vaalbank Dam, a giant irrigation project shared by the Orange Free State and the Transvaal, giving a reserve water supply to Johannesburg and other mining towns.

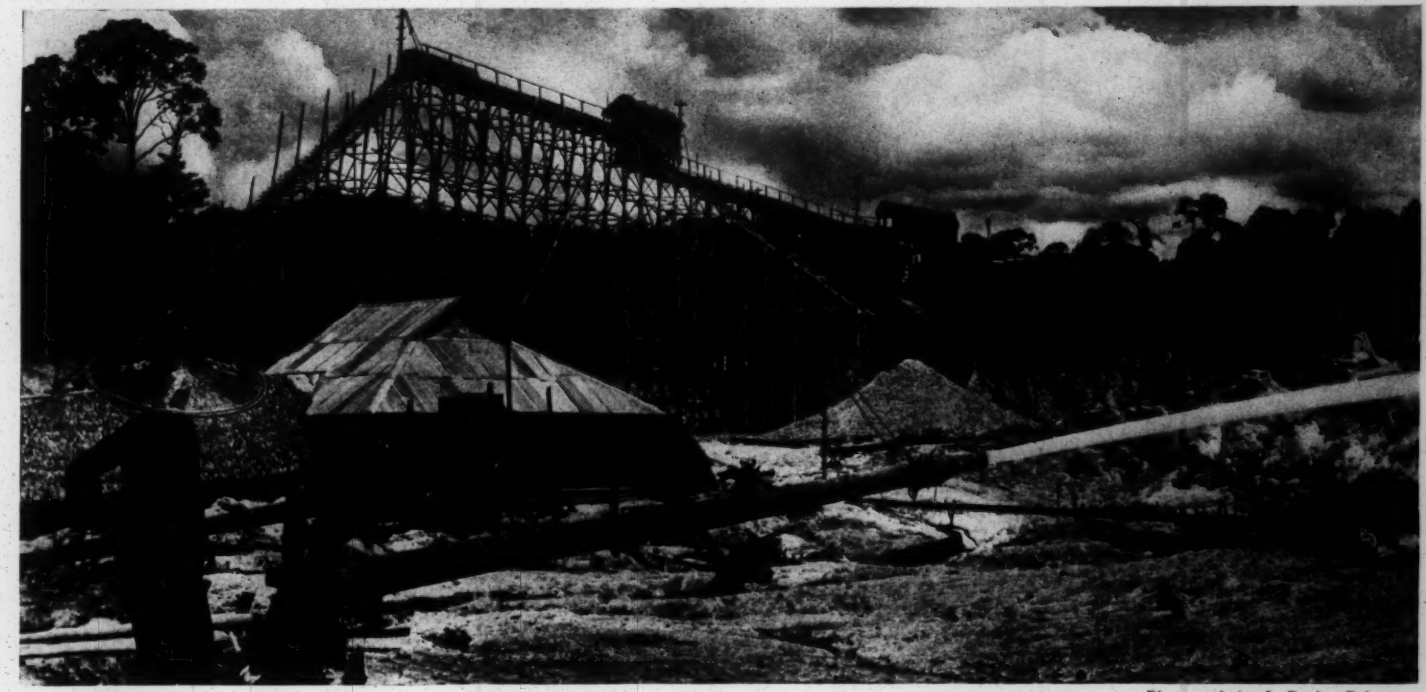
Bulletin No. 4, January 19, 1942.



Photograph by U. S. Bureau of Reclamation

GRAND COULEE'S CONDUITS COULD FURNISH WATER TO EVERYONE ON EARTH

From the lake behind the 500-foot-high concrete dam, water began pouring in 1941 through some of the turbines of Grand Coulee generators. When all the generators are operating, the project will produce 1,920,000 kilowatts, becoming the world's greatest maker of hydroelectric power. This output would be enough to supply sixteen million Americans with their normal power needs. Through the penstocks, the giant pipes which conduct water from the Columbia River to the power station turbines, will flow enough water to furnish everyone on earth with a gallon an hour. The giant size of the project is suggested by the penstock linings, 18 feet in diameter, photographed in sections before they were installed.



Photograph by J. Baylor Roberts

MANY RACES HELP MINE TIN IN THE WORLD'S NO. 1 TIN MARKET: MALAYA

The Malay Peninsula, "Melting Pot of Asia," with its conglomeration of races, colors, and castes, has furnished over 80 per cent of all the tin used in the United States. In such mines as this, in the Unfederated Malay State of Johore, the ore is driven from the earth by a stream of water of terrific force, as in the placer method of gold mining. The Chinese are mainly responsible for early development of the rich Malayan tin deposits. They braved the dangers of the jungle—wild beasts, tropical fevers, and savage natives—to provide this useful metal, so essential in peace or war. Its alloys are used in such diverse objects as tin cans, ships and airplanes, statues, tin foil, refrigerators, and guns.